

## REMARKS

Claims 1-38 are currently pending. Claims 1, 3-5, 7-10, 12-13, 15-26, 28-34, and 36-38 are amended. Claims 2, 14, 27, and 35 are canceled. Applicants request reconsideration of claims 1, 3-13, 15-26, 28-34 and 36-38 in view of the above amendments and the following remarks.

### Amendment to Specification

Applicants respectfully submit that element 22 described in paragraph 79 is incorrectly written as “memory model” instead “machine model”. Appropriate amendment to paragraph 79 has been made.

### Claim Objection

The Office Action has objected to claim 8 because of informality due to an extraneous word “for”. Claim 8 has been amended and Applicants respectfully request the Office to withdraw the objection of claim 8.

### Claim Rejection – 35 USC § 101

The Office Action has rejected claims 25-31 under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter. The Office has cited on page 2 of the Office Action the following:

*“The current focus of the Patent Office in regard to statutory inventions under U.S.C. § 101 for method claims and claims that recite a judicial exception (software) is that the claimed invention recite a practical application. Practical application can be provided by a physical transformation or a useful, concrete and tangible result”*

Applicants respectfully traverse this rejection. Applicants respectfully submit that a compiler, as directed in independent claim 25, is a statutory matter. A compiler

performs a practical application by translating a source code into an object code using a machine. The result of the translation, which is the object code or machine instruction, is tangible as it can be stored on a computer-readable medium for execution on a machine. Since a compiler can provide a “*useful, concrete and tangible result*”, Applicants respectfully submit that a compiler is a statutory matter and request the Office to withdraw the rejection of claims 25-31.

### **Claim Rejection – 35 USC § 102**

The Office Action has rejected claims 1-3, 5, 9-15, 17, 21-30, and 32-38 under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No 7,007,271 issued to Kumar et al. (hereinafter referred to as “*Kumar*”).

According to MPEP §2131,

*“‘A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.’ (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). ‘The identical invention must be shown in as complete detail as is contained in the ... claim.’ (Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). ‘The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required.’ (In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)).”*

Claim 1, as amended herein, is as follows:

1. A method comprising:

determining a slack value based on current resource constraints, for each of one or more ready instructions in a scheduling region;

selecting one of the ready instructions, based on the slack value;

scheduling the selected ready instruction; and

**repeating the method for determining, selecting and scheduling for each of**

**the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.**

(Emphasis added)

Claim 1 is now directed to a method to determine a slack value based on current resource constraints, for each of one or more ready instructions in a scheduling region, to select one of the ready instructions, based on the slack value, to schedule the selected ready instruction and to *repeat the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.*

As described in paragraphs 82-114, figures 2-4 and 6-10 of the specification, after a ready instruction is scheduled, the deadline value and slack value of each ready instruction remaining to be selected and scheduled is re-computed. This is because the deadline value and slack value of the each remaining ready instruction is subject to change after other instructions have been scheduled. The deadline value and slack value of each remaining ready instruction may change when a particular ready instruction is scheduled because that particular ready instruction takes up one unit of resource for its execution. Since one unit of resource is taken by that particular ready instruction, the deadline value and slack of each remaining ready instruction may be affected as the scheduling region has one unit of resource lesser to be allocated. Therefore, it is important to repeat the step of determining the slack value based on current resource constraints to factor the resource taken when a ready instruction is scheduled, for each of the ready instructions remaining to be selected and scheduled.

***Kumar teaches away from repeating the method for determining, selecting***

**and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.** In figure 1 of *Kumar*, it is very clear that *Kumar* teaches away from the teachings of claim 1. *Kumar* describes in step 115 of figure 1, the priority function for instructions in the selected region is computed only once. *Kumar* further describes that one factor for determining the priority function is slack, where Column 14, lines 21-24, states ... *An instruction that has certain predetermined number of 'slacks' can have predetermined priority...*"

*Kumar* describes the iteration of scheduling the instructions from steps 120 onwards and **none of the subsequent steps involves re-computing of the slack value of the instructions** and therefore changing the priority of the instructions. *Kumar* does not teach or suggest the limitation in claim 1 of repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.

In contrast, claim 1 teaches repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled. As discussed earlier, it is important to reconsider the current resource constraints after each iteration of the method for determining, selecting and scheduling as the deadline value and slack value of the each instruction remaining to be selected and scheduled is subject to change after other ready instructions have been scheduled. *Kumar* fails to consider re-computing of the slack value of the remaining instructions after an instruction is scheduled.

Therefore, since *Kumar* fails to teach at least one element in claim 1, Applicants respectfully request the Office to withdraw the rejection of claim 1. Independent claims

13, 25 and 32 similarly recite the same limitation in claim 1. All the arguments presented earlier for claim 1 apply fully to claims 13, 25 and 32. Therefore dependent claims 3, 5, 9-13, 15, 17, 21-26, 28-30, 32-34, and 36-38 are patentable as being dependent on the allowable base claims. (MPEP2143.03) The rejection of claims 2, 14, 27 and 35 is moot as they have been canceled without prejudice.

### **Claim Rejections – 35 USC § 103**

The Office Action has rejected claims 4, 6-8, 18-20 and 31 under 35 U.S.C 103(a), as being unpatentable over *Kumar*, in view of Cooper et al, 'An Experimental Evaluation of List Scheduling', Rice University, pp 1-15, September 1998. (hereinafter referred to as "*Cooper*").

In order to establish *prima facie* case of obviousness, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. One of the rationales includes combining prior art elements according to known methods to yield predictable results. To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

*(1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;*

*(2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;*

*(3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and*

*(4) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.*

As discussed earlier, *Kumar* does not teach or suggest the limitation in claim 1 of repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled. *Cooper* also does not teach or suggest the limitation in claim 1 of repeating the method for determining, selecting and scheduling for each of the one or more ready instructions remaining to be selected and scheduled until all ready instructions have been scheduled.

Therefore, there is no *prima facie* case of obviousness as both *Kumar* and *Cooper* fail to teach at least one element of the limitation in claim 1, as stated in Graham factual inquiries. Applicant respectfully requests the withdrawal of the rejection of claim 1.

Independent claims 13 and 25 similarly recite the same limitation in claim 1. All the arguments presented earlier for claim 1 apply fully to claims 13 and 25. Therefore dependent claims 4, 6-8, 18-20 and 31 are patentable as being dependent on the allowable base claims. (MPEP2143.03)

### **Conclusion**

Applicants respectfully submit that the rejections have been overcome by the amendment and remark, and that the claims as amended are now in condition for

allowance. Accordingly, Applicants respectfully request the rejections be withdrawn and the claims as amended be allowed.

**Invitation for a Telephone Interview**

The Examiner is requested to call the undersigned at (503) 439-8778 if there remains any issue with allowance of the case.

**Request for an Extension of Time**

The Applicant respectfully petitions for extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be needed. Please charge the fee under 37 C.F.R. § 1.17 for such extension to our Deposit Account No. 02-2666.

**Charge our Deposit Account**

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: April 8, 2008

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